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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,777	01/09/2007	Shunichi Osada	0599-0215PUS1	3791
2292 7590 03/01/2010 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
NELSON, MICHAEL B				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
03/01/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/575,777

Applicant(s)

OSADA ET AL.

Examiner

MICHAEL B. NELSON

Art Unit

1794

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendments filed on 11/23/09 have been entered. Claims 1-8, 10-18 are currently under examination on the merits. Applicant's 1.132 declaration claiming that the prior art reference relied upon in the previous office action would not possess the instantly claimed properties has been entered and the previous grounds of rejection are withdrawn and new grounds of rejection are presented below in this non-final office action.

Oath/Declaration

2. Applicant submitted a 1.132 declaration on 11/23/09 which contained the testimony of Syunichi Osada and which claimed that the Schrenk '820 reference did not in fact possess the instantly claimed property of a maximum reflectance of less than 25% ("the reflectance ranges exhibited by the evaluated polarizer as shown in Fig. 1 extend from just above about 5% to as high as about 50%" – page 2). Based on this declaration, the reference is overcome and the previous rejection is withdrawn.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 5, 8, 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Schrenk (U.S. 5,540,978).

5. Regarding claim 1, Schrenk discloses a more than 5 layered multilayer film with layer thickness of less than 100 nm (C10, L1-30, optical thicknesses of 0.07 and 0.11 correlate to actual thickness of 0.05 and 0.078 microns respectively – based on a refractive index of about 1.4, C7, L35-55). The thickness of the alternating layers is disclosed as increasing through a thickness gradient (C6, L10-25). The reflectance of the film is less than 25% for the range of 400nm up to an including the infrared range (Fig. 3, C2, L55-60 and C8, L50-65). The light used is not polarized.

6. Regarding claims 2, 5, 8 and 10-12, Schrenk discloses all of the limitations as set forth above. With respect to claim 2, Schrenk discloses that the layers may increase in thickness through a thickness gradient (C6, L10-25) which would result in the thickness ratio between adjacent layers increasing. With respect to claims 5, 8 and 10-12, Schrenk discloses that the refractive index of the layers is 0.07 and more than 50 layers are used (C10, L1-30).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
10. Claims 3, 4, 6, 7, 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schrenk (U.S. 5,540,978) as applied to claim 1 above, and further in view of Wheatley et al. (U.S. 5,126,880).
11. Regarding claims 3, 4, 6, 7 and 13-18, Schrenk discloses all of the limitations as set forth above. Schrenk does not disclose that the thickness gradient explicitly change in the manner as instantly claimed however it does disclose a thickness gradient (C6, L10-25) and it does disclose that other layers which partially reflect the visible or ultraviolet rays can be used when placing the film in a solar environment to partially heat up the catalyst using optically thick or very thin layers (C9, L1-25). Wheatley et al. discloses a film which incorporates optically very thin (less than 0.09 microns) and optically very thick (0.45 microns) film pairings with otherwise normally thick film pairing (between 0.09 and 0.45) (C3, L45-65 and Fig. 9 and 10). The thickness of the film layers are changed through out the film to provide a broader band of reflectance into the visible and infrared range and to provide uniform reflectance without localized variations of reflection on the film. Hence it would have been obvious to have

included the visual and infrared reflecting layers of Wheatley et al. in the film of Schrenk in a controlled manner in order to partially reflect a portion of the visual and infrared spectrum to heat up a catalyst as taught by Schrenk et al. In altering the degree of heat applied to the catalyst one having ordinary skill in the art would find it obvious to use a variety of reflectance's (including those less than 25%) so that the catalyst is not overly heated (Schrenk, C8, L60-65).

12. With respect to claim 3, the changing of the A and B layer thickness to be very thin or thick (as opposed to the normally thin layers) as shown in Fig. 9 and 10 would result in the n1 layers getting thicker while the n2 layers get thinner. With respect to claim 4, the thickness of the n1 layers increases and then decreases again through the thickness of the film in Fig. 7. With respect to claims 6 and 13-15, the thickness of the very thin layers is disclosed as being less than 0.09 which would include thicknesses of less than 0.03 microns. The amount of the very thin layers used would be adjusted by one having ordinary skill to control the degree of reflectance and the range of wavelengths reflected in order to only partially heat the catalysts as taught in Schrenk. With respect to claims 7 and 16-18, the ratio of the thick to the very thin layers is at least 0.2 (i.e. 0.09/0.45) while the ratio of the normal thickness layer pairings is roughly 1 (i.e. 70/75, C16, L10-25).

13. Claims 3, 4, 6, 7, 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schrenk (U.S. 5,540,978) as applied to claim 1 above, and further in view of Arends et al. (U.S. 5,360,659).

14. Regarding claims 3, 6, 7 and 13-18, Schrenk discloses all of the limitations as set forth above. Schrenk does not disclose that the thickness gradient explicitly change in the manner as instantly claimed however it does disclose a thickness gradient in general (C6, L10-25). Arends

discloses that by introducing a thickness gradient the bandwidth of wavelengths that are reflected can be widened, thereby leading to a higher net amount of reflection (C4, L10-25). Arends discloses a variety of gradient types that can be used. It would have been obvious to have used the different gradient types of Arends in the film of Schrenk in order to reflect a broader spectrum of the UV light that Schrenk intends to reflect for solar energy (C8, L50-65).

15. With respect to claims 3 and 4, Arends discloses a series of functions for the resin pairings including a quartic function which would result in the both the A and B layers increasing and decreasing as they move from one side to the other side of the laminate. With respect to claims 6 and 13-15, Arends discloses a particular set of repeating layer pairings which provide the advantageously broader wavelength reflections while also allowing for reduced unwanted higher order reflections and simpler manufacturing (C6, L20-40). The ratio of thicknesses is relative to the desired optical thickness needed to reflect the particular wavelength (with each three layer set adding up to a single optical thickness). The lower relative thicknesses (i.e. 0.111) would result in the optical layers of Schrenk (i.e. 0.07 and 0.11) being used at a relative optical thickness of between 0.00777 and 0.01221. Since four out of the six layers in the six layered repeating unit have a relative optical thickness of 0.111 the majority of the layers in the film would have a thickness of below 30 nm. With respect to claims 7 and 16-18, the ratio of the first A layer and the first B layer in the six layer repeating unit is 0.14 while the ratio of the last A and B layers is 1:1.

Response to Arguments

16. Applicant's arguments are considered moot in light of the new grounds of rejection.

Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL B. NELSON whose telephone number is (571) 270-3877. The examiner can normally be reached on Monday through Thursday 6AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on (571) 272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Patricia L. Nordmeyer/
Primary Examiner, Art Unit 1794

/MN/
02/23/10